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SMALL-POX:

THE

PREDISPOSING CONDITIONS

AND THEIR

PREVENTION.

BY

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SMALL-POX.

————— ~~ANALYSIS~~

DISEASES which destroy a great many human lives, we observe, make their appearance from time to time. But the nature of these diseases which thus appear periodically, *seems* to be different from others, and they have been thought to have their origin in climatical influences. That particular individuals *feel* more or less affected by certain climates or atmospheres, while others do not, there can be no doubt. But while we admit that peculiar changes in the atmosphere occur, which must have their certain effect, we do not admit that such changes could affect one person and not another. Nature is very exact, and mathematically precise in carrying on her work. Her laws are invARIABLE and absolute, logical and consequent in their opera-

tions, and admit of no exceptions whatever. Therefore, if we believe we have discovered one of the facts of nature, our first duty is to see whether it is always unfailing in its effect or application; for if it is not thus unfailing, we put it down, not as a law or fact of nature, but as a human mistake. Therefore, if there exists anything in the atmosphere which is capable of injuring any one person's health, it must, from the very law of necessity, be general in its effects, so far as all who breathe it under the same conditions are concerned; that is, if it injure one, all must feel its effects, as they would the effects of a strong wind, of heat, or of cold, or as they would the effect of arsenic, or carbonic acid inhaled, or an electrical shock, fire, water, etc. For example, if a certain number of persons take arsenic, or inhale carbonic acid gas, etc., under the same condition, *all* will be alike injured; *not one* can escape. Hence, if we observe that only a portion, perhaps a third, or even much less, of a given population becomes seriously affected, while all the rest are entirely free or exempt, then we must logically conclude that there was something different in the organism of those affected,

from those who were exempt; in other words, that the reason or cause of their being affected is to be found *in themselves*, and not in the atmosphere alone. In all epidemics, such as cholera, small-pox, yellow fever, typhus, etc., we find it generally admitted that the affected persons have shown a previously existing predisposition or susceptibility to it; that is, they were so constituted in their organization as to be liable to it, while those who continued in health were so constituted as to escape uninjured. Therefore, it is a matter of no consequence to us here, whether minute spores float in the atmosphere, carrying the germ of these diseases, or whether gases escape from the earth, or from diseased persons; or whether electrical currents, or uneven pressure of the atmosphere, or whatever may be thought to be the infecting agent; we have to do *only* with the predisposition or susceptibility necessary in order to be infected. If we can avoid this *predisposition*, we need have no fear about the atmosphere, or other supposed infecting agents; we are invulnerable. This we lay down as a general rule; but our present purpose and object in particular

is, to ascertain how the predisposition to Small-pox may be escaped.

Small-pox is an epidemic which is very 'old, extending back into the past as far as the records of history, but in no century has it ever been known to be worse, or more fatal, than in the seventeenth, after the thirty years' war in Europe ; there seemed to be no stopping its ravages. In the beginning of the eighteenth century, an English lady learned that the Asiatic tribes inoculated themselves with Small-pox virus with a view to escape the disfiguring of their faces from pitting ; and the inoculation with Small-pox virus soon became inaugurated in Britain. But the consequences resulting from it were of such a character, that it soon came to be considered as a dangerous proceeding. In the latter part of the eighteenth century, Jenner introduced vaccination, substituting cow-pox lymph for human Small-pox lymph. Since that time, which is nearly one hundred years, vaccination has been the only preventive known, and has been most thoroughly employed. But notwithstanding, Small-pox makes its appearance, and at the present time is very severe both in Europe and in parts of this country.

It has been admitted by the warmest advocates of vaccination, that it is not *unfailing*, but is considered a means by which the party vaccinated is made *less* liable to Small-pox. It must therefore be admitted that something more certain and sure in its effects can be considered, and that an improvement as regards security against Small-pox is not unseasonable, or out of place.

It is no part of our present purpose to repeat, or to criticise the various views which are held in regard to Small-pox. Whether it is born with a child, or caught from the atmosphere, or from contagion, or from spores, is a matter of comparative indifference. The fact is, that it is a very disagreeable affection, and everybody is interested in avoiding it.

But what is Small-pox? It must be admitted by all, that Small-pox consists in an escape or exudation of something into the skin which causes it to swell, and by a process of putrefaction destroys it, and not unfrequently carries off the patient. This mass, which is thus exuded or thrown off into the skin, *must* necessarily come from the blood; therefore it must be something in the blood which is abnormal, sickly, or bad, or

there must be something which has deranged the whole system to such a degree that the blood, as a consequent, is disturbed in an exceedingly peculiar way. But if we would intelligently investigate this *something*, we must understand how the blood is constituted, and learn which substance can be the offending one, or what other parts of the body have disturbed the blood-circulation so as to bring about Small-pox.

Were we to analyze the blood, we should find it to consist of three principal parts, namely: water, albuminous combinations, and mineral substances called blood salts. But since it is not possible that the blood serum or watery part of the blood can be the offending element, it must be found in the albuminous combinations, or in the blood salts. Before we proceed to investigate this particular point, however, it is necessary for us to understand what these several parts are for; that is, their use, their office. Water in the blood performs the office of a solvent *only*, and does not of itself undergo any decomposition. The water which we drink having performed its office in the body, leaves it again, without change, as water. The albuminous portion of the blood we

find partly organized, as blood-globules, which act as the chemical machinery in the blood, and partly not organized, as fibrin and albumen, etc. These two again are distinguished by their consistency — fibrin, under ordinary circumstances, being confined within the blood-vessels, while albumen is not; but is that substance which penetrates the vessels, and nourishes all their tissues. Albumen is that substance which is the most prominent for life, and undergoes the greatest changes in the body. The more of it we have in our blood, the richer it is for nutrition; but it will not be difficult to comprehend that there is a limit or bound to its usefulness, just as there is to the usefulness of fertilizers in their application to the soil. Every farmer and gardener knows that without the use of fertilizers of some kind, they can raise nothing; and they know equally well, that if they apply the fertilizers in excess, the result will be the ruin of their crop. Excess, therefore, as far as the result is concerned, is just as bad as its opposite — a deficiency. There must be a certain relative proportion of things, everywhere, in order to secure a given result; and this is as true in reference to the blood, as to

anything else. Nature, therefore, must have instituted within us a check or means by which to regulate the amount of albumen in the blood, as otherwise it might get so thick as to prevent it from flowing at all. This check is the *blood salts generally, but common table salt especially*.

The salt we eat leaves our body again as salt, without undergoing any change whatever; but while in the body, performs the office of keeping the albumen in proper balance. Hence, from this physiological fact, it becomes evident that, if salt is wanting, albumen will be found in excess; and if salt preponderates, or is in excess, albumen is deficient, or in demand; both cannot be in excess at the same time. It is equally evident that the blood of a healthy person must contain the relative proportions of water, albumen and salts, necessary to constitute normal or healthy blood, and that *any* variations from this formula of nature is abnormal, and must sooner or later, if the correct balance is not very soon reëstablished, result in the development of some disorder as the consequence. As this cannot be denied by any intelligent person, we shall pursue our investigations regarding the consequences to the human economy

growing out of those conditions which arise from an excess or deficiency of albumen, or of salt, in the blood.

It will, however, first be necessary to make the reader somewhat acquainted with another portion of the machinery of our body — the nerves. We all know that we have nerves by which our motions are controlled, and nerves of sensation by which we feel. Both these originate, and have their seat in the brain. But we know that our heart beats without our will, and so do our intestines move, and so we must breathe, and so do we digest our food.

The system of nerves that controls or presides over these particular departments of operations within the body, is called the sympathetic. It does not originate in the brain, but has its principal centres in the abdominal cavity, at the sides and in front of the spinal column, and is that nerve by whose power we live. This nerve is as susceptible or liable to injury as any other, but being entirely without the power of sensation, gives no pain. When this nerve has been injured for a length of time, it gives notice either by means of its connection with other nerves, or its proper

work is arrested at some point for a time, or it works too much. For instance, if we abuse our stomachs for years by the use of strong stimulants, or high living, wines, etc., this nerve, being insulted at the stomach, will relax in the joints of the toes, and produce what is called gout, showing no relaxation in the stomach, for should it do so, the person would die. Or it relaxes in the skin generally, and produces that condition known as measles, or scarlet fever, or chicken-pox, or small-pox, or if it affects more the lining membranes of the internal canals, scurvy, or typhus fever, cholera, and the like. The difference between these disorders is partly owing to the different degrees of pressure which the force of the heart exerts upon the body, or to the chemical difference of the blood constituents, or only to the seat or particular point of difficulty, or to the more or less severe injury to the nerve itself. The nerve may act in consequence of too much irritation, so as to contract the finest capillary blood-vessels to a degree which admits of no circulation, producing complete stoppage, or, in consequence of loss of power, it can relax the walls of the vessels to such an extent as to let the

blood run directly through them. Having thus given a general idea of the office of this nerve, we shall now show the reason for its abnormal action under certain conditions.

Suppose we eat meat (which contains a great amount of albumen), and, at the same time, *too much* salt. The almost immediate consequence will be that we become very thirsty, the body requires as much more water as is necessary to throw out all the salt in excess of what was required. This we all know; but if the same experiment is repeated again and again, we shall find that sickness is the result; the blood becomes very poor and thin, and will no longer coagulate, and, of course, cannot sufficiently nourish the body, which, in consequence, becomes weak, and the sympathetic nerve finally relaxes so much that the blood runs directly through the blood-vessels. This condition is well known under the name of *scurvy*.

A similar process, however, will occur, whenever from *any* cause there is a manifest lack or deficiency of albumen. For example, typhus fever, which, in its origin, is caused by an excess of albuminous matter, is often followed by bleeding,

as in scurvy. In this case, the fever reduces the albumen to such an extent, that the nerve relaxes so as to permit the blood to run through the blood-vessels; and the same can occur after Small-pox, but only when the process of recovery is very slow and unfavorable. It also sometimes occurs in cases of alcohol poisoning of long duration. A more severe and profuse bleeding is occasionally observed in cholera and yellow fever, in consequence of spasmodic contraction of this nerve.

But suppose we reverse the case, and eat meat, and *too little* salt; what then will be the consequences? From what we have already learned, the answer can be very readily given; there will be an accumulation of albuminous matter in the blood, which makes it too thick to answer its designed purposes under all circumstances. Therefore, upon the occurrence of some unusual excitement, under which the action of the heart necessarily becomes accelerated, the pulsations or beats following each other more and more rapidly, this blood, which is too thick, would in some way have to get rid of a part of the albumen, as otherwise it could not flow with sufficient rapidity, and under the circumstances would

produce pneumonia, or similar disorders, by throwing this superfluous albumen into the lungs. Or the occurrence of an extraordinary nervous irritation could cause a spasmodic contraction of the peripheric portion of the nerve, and thus obstruct the free circulation in the skin, producing a sensation of dull headache from blood pressure ; then the nerve, by suddenly relaxing, would allow the blood to rush into the now powerless vessels, extending them to the utmost, until they would either burst, or remain in this overfilled and extended condition. This would be the state which we observe in the beginning or earliest stage of Small-pox. The exuded or escaped mass consequent upon the rupture of the blood-vessels then begins to putrefy, destroys the surrounding tissues, and finally heals by drying up, leaving the skin in a more or less mutilated condition ; or the patient dies from general blood poisoning, or from exhaustion in consequence of the total absence of a reëstablished digestion. In short, we wish to be understood as saying that the *pre-disposition* to Small-pox consists in an undue proportion of albuminous matter to the blood-salts, and that as the result, an otherwise inoffensive

nervous irritation becomes sufficient to cause the blood to part with this superfluous albumen, which in this case is thrown into the skin, and constitutes that condition which is commonly called Small-pox. And we further maintain, that a person who does not exhibit this superabundance of albuminous matter in his blood is *not* liable to Small-pox under any circumstances of exposure, or contact with patients suffering from this disorder.

In support of this theory, which, if correct, gives us at once the absolute control of this dreaded disease, we give a few illustrations. It is well known that Small-pox is a common disease among the Asiatic tribes, who first made use of inoculation as a preventive. If we consider their mode of life, we shall observe that they live to a great extent on starch and sugar; that is, upon food which largely contains starch and sugar, and that salt is not regularly used by them in connection with their food, or otherwise, either in its own form, or in salt fish, or meat; and their soft, fatty, and puffy appearance at once indicates a preponderance of fat and albumen. On the other hand, the disease is never found among

such races as live on salt fish, or who use salt generally. It was unknown among the American Indians previous to the coming of the white man, but as soon as he came, and began to have dealings with them, they were destroyed by Small-pox in masses. Why? Had the climate undergone a sudden change, or some deadly thing floating in a current of the atmosphere, descended upon them, or had the white man brought it from over the sea in his person, ships, or merchandise? The Indians sold their furs, and other articles of trade, in exchange for fire-water; and alcohol, as we shall hereafter learn, has the property or power of freeing the blood of its salt. The Indians, in connection with their natural food (wild game, fish, roots, etc.), received into their systems a sufficient quantity of salt; but when their blood-salts were thrown out by the use of alcoholic drinks, causing a relative preponderance of albuminous matter in the blood, they at once became predisposed to Small-pox, and fell victims to its ravages. The Western hunter or trapper would rather part with his powder than his salt, because he well knows that without salt he will very soon be able to do nothing, from loss of vigor or power.

He will sell, or sometimes give, the Indian all the liquor he wants, or even powder, but will never part with his salt, and the more especially as the Indian certainly cares little or nothing about it.

We find Small-pox a regular visitant wherever, from any cause, salt has become scarce. After all the long wars in Europe, when, from the pressure of what was regarded as more important business, the salt mines were unworked or neglected, it has invariably made its appearance. The same is true in reference to all besieged cities after that salt became scarce; examples of which, we have in the sieges of Metz and Paris, during the late Franco-Prussian war. When food became scanty, a hungry person would eat almost anything, and salt is about the last thing for which he would ask, especially when scarce and expensive. And, besides, when a person eats salt he becomes hungry much sooner than without it, and consequently, when food is very scarce, will neglect its use, instead of procuring it; and for the same reason salt is in very limited use in poor countries, and among the very poor. The Prussian army had no Small-pox during the

late war — and why? they were well provided with *pea-sausages*, which contained not only salt, but *all* the necessary ingredients the human body requires for health and vigor. It will invariably be found, upon investigation, that the ravages of Small-pox are principally confined to those cities, countries, or particular localities where the population is over-crowded, or dwells in close, unventilated tenements, with habits and surroundings of which, to say the least, are bad, living for the most part in the use of alcohol, with little or no salt, and upon food which does not contain the requisite elements for constituting the best blood. And if this investigation is still further pursued, the reverse of this will be found true: namely, that that city, or part of a city, the population of which is composed of what is usually termed the better or upper classes, whose dwellings, surroundings, habits of life, and diet, are what they should be, in connection with the use of a sufficient quantity of salt, invariably and absolutely escape this disease.

For an illustration of the truth of this statement, let us, for example, take Boston. Disfigured faces from the pitting of Small-pox are very rarely seen

among the native population, or better classes ; while they are very numerous among the foreign population, and the very poor. Small-pox has frequently visited towns and cities in the vicinity of Boston—Lowell, for instance—without affecting Boston in the slightest degree. And whenever it has made its appearance here, it has, as already intimated, been confined to particular localities and populations. The reason for this comparative freedom from Small-pox in Boston is very simple. In no city in the world is there so much salt used, in proportion to the number of inhabitants, as here. It would be difficult to find a table where salt was not placed before each person, and at almost every meal, with the exception, perhaps, of *tea*. Fish-balls (made from salt fish) are also here a regular dish. Foreigners coming to Boston almost invariably live better than they did at home ; and while they live principally upon meat and potatoes, with considerable fat, they never think of adding any more salt than they have previously been in the habit of using, though probably consume eight times the amount of albumen they were accustomed to when at home ; thus producing an excess of albumen in the blood—the *predisposition*

to Small-pox. If any person wishes to get an idea of how much salt they should use under certain circumstances, let them take a baked potato, and add as much salt as the taste will admit of without being unpleasant, or as much as the taste will bear, and they will be surprised at the amount required, provided they have used no sugar for some time previous. It will, however, be found, that very many persons have a strong prejudice against salt. They have come to believe that a free use of it is hurtful, and therefore avoid it as much as possible, For example, it is quite commonly believed among the peasantry of Europe, that the use of salt makes the bones brittle, and, consequently, very little is used by them. And then again, a poor man, when hungry, cares next to nothing for salt, but will eat whatever is set before him, without regard to the flavor. It should also be borne in mind, that those lands which are cultivated by the poor, are, as a general thing, very badly fertilized, and, consequently, that all the cereals, vegetables, etc., thus produced, and used or employed as food, are deficient in salts, and that the same is equally true in reference to the various animals, of which

either the milk or the flesh is used as food, when kept or confined in close stables, yards, or enclosed pastures, having no freedom to procure their own food, or a free access to salt. Another very important fact which bears upon this subject is, that there are substances in use which have been introduced by civilization, that either have the property or power of expelling the salt from the blood, or of becoming a substitute for it, as to taste. The most prominent of these is *alcohol* among the former, and *sugar* among the latter. With a deficiency of salt in the blood, arising from these several sources (a neglect of its use from whatever cause, cereals, vegetables, flesh-meat, etc., used as food, which have been produced under bad culture or conditions, the use of alcohol, etc., by which the salt is expelled, and the substitution of sugar and other substances by which the taste is satisfied), we find that on the continent of Europe, whenever and wherever there has been an occasion of great excitement, like war, for example, which has impoverished the people so as to cut off the ordinary supply of food, Small-pox has invariably appeared.

We have already spoken of the American

Indians dying of Small-pox as soon as alcohol became master of them. A person, after being intoxicated with alcohol, will have a decided craving for salt, or saltish food, as any one can see who will take the necessary trouble to make the observation. It is on this account that salt fish is to be found in almost every bar-room. Without the daily use of salt, the toper becomes more or less bloated in appearance, and is not only an easy prey to Small-pox, when exposed, but is in that condition under which *Small-pox can originate in him at any time*. Therefore we find Small-pox among races or nations that use alcohol freely, and at the same time do not use much salt. The poor people of some countries live principally upon potatoes and pork, and use liquor freely. The pork, and the few cereals and other vegetables used by them for food in addition to the potato, having been produced or raised on soil badly fertilized, or under unfavorable conditions, contain little or no salt whatever, while the free use of alcohol throws out, or expels, what little the body may have gained from other sources; and consequently communities, races, or nations who live in this way are always

subject to Small-pox; among such it makes its greatest ravages. The fact that alcohol expels, or throws out, the blood-salts, can be easily tested by an examination of the urine of a person when perfectly sober, and when intoxicated; the difference of the saline residuum will be seen immediately.

Among the Haytiens, especially among the children, Small-pox is one of the most common disorders. The principal food of the people consists of yams, rice, bananas, and white bread, with a free use of rum; the delicacies are salt fish or salt pork, from New England. Neither yams, rice, nor white bread contains salt, and the rum they drink expels what they get from the salt fish and pork they use; but of these latter their children get very little, if any. Salt fish and meat are dear in Hayti, and the lazy Haytien cares little to supply salt fish for his children when they have plenty of bananas, rice, and fruits to live upon. We venture to say that were the importation of salted food wholly stopped, the Haytien population would die out in a few years, of Small-pox and kindred diseases.

By the use of alcohol the blood-salts are ex-

pelled; but by the use of sugar the demand for salt is not felt. Every one knows that by flavoring starch-pudding or rice with sugar, no salt is required, and that by flavoring it with salt, no sugar is required: it is equally palatable, and the taste is satisfied. And even in the blood itself sugar can take the place of salt for a time, but not permanently. It will be found that all who use much sugar do not care for salt; and that when sugar is employed where salt should be used, the taste does not indicate the error. Still, sugar cannot replace salt in the body, and its excessive use renders the body liable to an excess of albumen and fat, and produces the same external appearance as alcohol, though not so soon. It will also be found that almost every person who dislikes salt, or saline food, uses sugar in excess. A moderate use of sugar is well enough, as long as we supply the necessary amount of salt; but if we exclude the salt by an excessive use of sugar, we thereby render the body liable to infection from Small-pox. It can be noticed that children, if left to themselves, often eat salt by the spoonful; which, if they are prevented from eating freely, tastes to them as

sweet as sugar. Many parents forbid the free use of salt, and feed their children on milk and starchy food, flavored with sugar. What we wish principally to show just here is, that by art we substitute substances for those which are required by nature, or, to a great extent, defy her demands, and thereby render our bodies liable to diseases which otherwise would be unknown. Neither animals nor man know anything of Small-pox in their natural state; but cows which are kept in close stables, and sheep, if prevented from eating salt, show it. We therefore positively maintain that Small-pox is not a disease of nature, but a consequence of some *mistake* of civilization, which, in part, consists in a deficient use of salt, or in an excessive use of such articles of food as either expel salt from the blood, or, for the time, substitute the demand for it.

It is not necessary, however, that a person who has an undue proportion of albuminous matter in his blood must, as a rule, get Small-pox; but according to circumstances, he may be affected in some other part of the body instead of the skin; for example, if in his joints, the condition is called

acute rheumatism of the joints—a very dangerous disorder for life; or if his intestines become affected, the condition is called “typhus.” There are several reasons why similar derangements in the blood will affect various places, at different times. Albuminous compositions in the blood are very changeable, and vary very much, as to whether such substance is readily or newly formed, or whether it has finished its purpose, and is only left as residuum, or so-called blood cinders, which have not been readily and properly expelled. Another reason is, the constitutional difference and habits of individuals are such, that certain nervous centres in one are weaker than in others, and naturally the parts which are controlled by the weakest nerves, will be the ones soonest affected.

The last reason we shall here adduce is, that for all transformations and new formations there exists a certain and unchangeable law of nature, which we shortly quote from a paper “On Cells and their Life,” published in *Good Health*, Dec. 1869, and which all should most fully comprehend.

"All the various forms of matter which exist, have certain qualities, which may be divided into active and passive; oxygen being the most active, and carbon the most passive, of them all. Oxygen, therefore, has the strongest affinity for carbon, and its combinations are the most intimate and difficult of decomposition *of any yet known*. Certain forms of matter of a generally passive character, under favorable circumstances, possess the quality essential to the formation of crystals. And it is a remarkable fact, that each matter, or even combination, has always and invariably the same crystal form peculiar to itself. The constant tendency of the active to pursue the passive, for combination with them, constitutes what, from a scientific point of view, is called life,—a tendency to which may be found in all and every kind of matter. The various combinations which are taking place, and the compound substances that are in constant process of formation, have their origin in this principle. By the aid of science these combinations are analyzed, and the compound substances are thus decomposed into what is called elements, or elementary matter. Thus, by the light which science reveals, we gain some definite knowledge

of the various properties and qualities of the different forms of matter, their relations to each other, and the results arising from their combination. As oxygen is the most active of all known substances, it is always ready, upon every occasion which offers, to act upon every other element, or combination of elements, with which it comes in contact. The opportunity for its doing so may exist in pressure, concussive motion, light, electricity, heat, or by a third element, or by a combination of elements. Any two elements may combine under given circumstances, one being always more active than the other. When another element, more active than either of the previous, is brought into exercise, it may destroy their unity by decomposing them, and appropriate the more passive to itself, or it may combine with both together.

"Life may be either organic or inorganic in its nature; but the difference between them is, perhaps, not as great as is generally supposed. The latter may be regarded as simple, the former as complicated, life. The simple or inorganic forms of life are found to exist before the commencement of the organic, or complicated; and also,

again, after it has ceased to exist. Organic, or complicated, life, therefore, may be regarded as occupying a position midway between the two periods of simple or inorganic life. Illustrations of inorganic life may be found in the growth of stones, crystals, and other precious gems, and of electrical currents. Similar illustrations of organic life are more readily seen in the under-ferment cell, in the infinite variety of the vegetable and animal kingdom, and in the human organism; the first-named being the lowest form of organic life known, and the latter the highest. Inorganic life can exist independent of the organic, but the organic cannot exist without the inorganic; organic life is, therefore, a complication of inorganic life qualities; the first is limited, the other is not. . . .

"Each matter, or element, has its own peculiarity; every element has a weight of its own, which is known by numbers. Hydrogen, being the lightest, has the number 1; oxygen, 8; carbon, 6; Nitrogen, 14, etc. If one element combines with another under certain conditions, then this combination will always take place under the same proportions of weight (equivalents). For

example, oxygen combines with hydrogen to form water. We always have 8 equivalents of oxygen to 1 equivalent of hydrogen; it is impossible that 4 or 5, or 7 or 9, of oxygen could be combined with 1 of hydrogen. This number 8 is peculiar to oxygen only, and cannot be found with any other element, or combination of elements; it is the invariable quality of oxygen, and characterizes it in all combinations. Carbonic acid consists of 1 carbon, which has 6 for its number, with 2 oxygen, with 8 for its number, its formula is $C O^2$, consequently its combination in equivalents is 6 carbon to 16 oxygen. It is impossible to have 6 carbon to 15 or 17 oxygen, or 4 or 5 carbon to 16 oxygen. This unvarying, most exact, and absolute adherence to her own formula, by nature in all her realms, is here stated to show the mathematical precision with which she carries on her work.

"The different elements, as before stated, can combine among themselves in all directions, but they must always and invariably follow another unchanging law. For as all combinations must always and invariably take place with certain and unvarying equivalents, according to the law just

stated, so, when from any cause a body becomes decomposed, the elements which constituted it being thus set free, must from necessity *form* their new unities, in accordance with such organism as may happen to be in process of construction at the place where, at that instant of time, such particular element was set free. For example: if we take a grain of wheat, and decompose it in our stomach, its elements are bound to serve as material for animal cells; if we take it and throw it into a fermenting liquid, its elements are then bound to serve for the formation of ferment cells. If we take cells from our own body, and place them within reach of an apple-tree, the elements of our cells are bound to serve for the purposes of the apple-tree. It is in accordance with this law that plants are nourished by the gases of the atmosphere, and by fertilizers applied to the soil, and it is also in accordance with this law that our bodies are nourished and sustained by the various forms of food of which we partake.

"The same law also controls the various forms of disorders to which we subject ourselves through neglect of the blood. In fact, upon this law rests the arrangement of the whole world."

It will be seen that all decomposition takes place according to this law; for wherever decomposition of one form commences, the formation of

a new one begins. People residing in the same cities or places, generally live in many respects very nearly alike. That is, the general character of their food, water, and the air they breathe, is the same, the construction of their houses, and the character of their occupations similar or alike, and bad as well as good habits find imitators, etc., and hence it is no cause for wonder that they should be similarly affected by the same causes.

The amount of salts required in the body, varies very much according to the employment or occupation of the person. A person who uses his muscles more than his nervous system, requires much less salt than the one who uses his brain most. The use of the brain and nerves is followed by an increased amount of salts in the excretions, which goes to show that more is used in brain labor than in mere physical labor, and therefore that more should be supplied. The person who lives on coarse bread, and good meats, requires less salt than the one who lives on very white bread, starchy food, and poor meat. The person who lives on potatoes, fat, and rum, requires more salt than ten ordinary persons together, to maintain the proper balance. A person living on a great variety of things, flesh-meat, cereals, vegetables, fruits, fish, oysters, etc., requires less salt than the one living on one kind of food.

It is a common error, or mistake, to regard

phosphorus as an especial agent for nervous power ; the fact is, the nerves require all the blood-salts together, but especially common table-salt, which is the strongest nervous stimulant nature has provided.

Persons who have had Small-pox will remember, that for some time previous, they felt dull, heavy, and sluggish ; not sick enough to be alarmed by it, but were not as lively and vivacious as formerly ; sometimes sad, moody, or melancholy, and sometimes nervously irritable and unhappy. This peculiarity of feeling *always* precedes Small-pox, and is occasioned by the excess of albuminous substances in the blood. In the beginning of Small-pox, it is characterized by an extreme headache, the sensations of which are as though a screw was being driven into the back part of the head. This is the condition when the blood-vessels are contracted by the peripheric portion of the nerve, and the blood thereby driven into the internal vessels. This state is always accompanied by excessive chilliness ; but if the nerve relaxes, dry heat is felt on the skin. In a day or two, paralysis of the peripheric portion of the nerve occurs, either over the whole surface of the body, or only over a part ; sometimes over the whole surface of the skin, and in the mouth, stomach, and intestines. Such cases are generally fatal. In an exact ratio to the

paralytic portion of the nerve, the peculiar pox appear, first as red pustules, which swell more and more, according to circumstances, sometimes remaining single, and sometimes running together, so as to give to the patient the appearance of a swollen and almost shapeless mass. The severity of the case depends entirely upon the previous condition of the blood. In due time these pustules begin to suppurate, and after having discharged their pus (which is nothing but decomposed albumen, with a little escaped blood, and some fragments of skin which have been destroyed in the process), dry up, leaving marks on the skin where they were. After persons recover from Small-pox they almost invariably say they feel as if *new born*. The fact is, they are now only healthier than they were previous; that is, they now experience the benefit of a correct balance in their blood, and, therefore, feel as if new born. *But a person who always lives correctly will constantly have a similar experience, and no need for Small-pox.* The very fact of this invariable experience of persons who have had the Small-pox is one of the best proofs of their *previously* sick condition, which, however, they were unable to perceive, simply because they either did not know or think of any better conditions at the time.

The excess of albumen in the blood, or the

predisposition to Small-pox, and kindred diseases, shows itself in some, by a heavy, sluggish feeling, more or less oppressive; others are oppressed with a sadness and melancholy, which makes them ready for suicide; while others, again, are depressed one minute, and ready for a fight the next. The appetite is irregular, and generally of such a character, that while the person wants or craves something, he does not know what he wants. Such persons very frequently give expression to their own view of their condition, by saying, "My blood is too thick." And so it is. Any kind of irritation, which, to a healthy body, would be perfectly harmless in its effect, is quite sufficient, when this condition has reached a certain height, to produce an immediate effect. For example, a fright, nervous depression, a shock of some kind, want of sleep, or impaired digestion, may occasion the before-mentioned condition of the nerves, resulting in the expulsion of superfluous material.

It would, however, be a great mistake to suppose that by eating a handful of salt the difficulty would be corrected. For since the amount, as to quantity of blood, can never vary in the body, the blood-salts, when deficient or lacking, are substituted by incorrect or used-up material, all of which we shall call blood cinders. These have to be removed before we can introduce the proper

amount of fresh or new salts. This idea of correcting the blood may be illustrated somewhat, by the way in which we renew a fire; before we put on fresh coal, we remove the cinders. But this cannot be done all at once with the human blood; the process must be gradual. The amount of new material introduced must be in due proportion to the excreted one; otherwise, the purpose is not reached, or serious trouble is caused.

It is possible that the suddenly excessive use of salt may be the immediate occasion of the appearance of Small-pox, though previously caused by the want of it in the first place. It very often occurs, that although a person has need of salt, his appetite will not crave it, the blood being too much filled with other material. In these cases it will generally be found that a desire for acids exists, the demand for which should be gratified at once; not by vinegar, but by some natural organic acid, such as lemon-juice, sour apples, etc. When the demand for acid has been met, and no improper food constantly introduced, the demand for salt, if needed, will manifest itself very strongly. Then, as much salt as the taste demands should be daily eaten with the food.

There are probably many persons who will doubt, or perhaps even deny, that there is any deficiency of salt in their case, or as regards

themselves, or who cannot readily comprehend that they do not live correctly. We shall therefore give some general rules of diet, from which everybody will be able to understand how the blood difficulty just spoken of is brought about, and how avoided.

If a person takes any kind of liquid or drink during the process of eating, he is liable to overload his stomach, or eat too much. If he does not take any liquid while eating, the saliva, by which the food is moistened during mastication, will stop flowing as soon as the stomach has received enough. Therefore, if a person eats a beefsteak, and drinks with it sweetened coffee, he makes three mistakes at once. First, he substitutes the coffee for the saliva which nature has provided, and runs the risk of over-filling the stomach; second, he takes sugar instead of salt, which is a gross mistake; and third, by drinking coffee he highly excites and irritates the nerves, thereby making it difficult for the stomach to dissolve the meat properly. The rule therefore is, to drink coffee alone, or for the most part with a little toast; but coffee with meat or fat is bad, but sugar with meat or fat is much worse.

The habit of flavoring rice, puddings, or any kind of starchy material with sugar, though very general among cooks, is a bad one. All starchy food should first be properly seasoned or flavored

with salt, and then, if required, sugar added. If eggs are used with the starch or starchy food, the defect of salt is still greater, and quite a serious mistake. The drinking of milk in connection with the eating of flesh-meat, or at the same time, is bad, because the milk will immediately absorb the gastric acid, curdle and enclose the meat like a heavy coating, thus preventing it from dissolving; and at the same time the sugar in the milk will exclude salt from the taste.

The use of any stimulant with a solid meal at the same time, is very bad. If a person is hungry, and takes a strong cup of coffee or tea, he thereby loses, for a time, the demand for food, through the action of these substances at the nerves. They act somewhat as a very exciting thing does on a man's brain, by which his appetite, for the time, is taken away. The use of all stimulants are beneficial *only* as they are properly used, and very hurtful if used improperly. It is, therefore, a very bad mistake to drink tea, coffee, or alcohol with dinner, or a similar meal. No matter how often or how long a person may have done so without direct injury, it is *very bad*. When a person has come to feel the bad effect, he is quite sick already. These stimulants not only materially hurt our digestion, but take away our natural taste, the inclinations nature gave us, the instinctive knowledge of what we should eat.

All persons who drink much tea, coffee, or the like, have no instinctive taste or craving for the right or needed food at all. We say none whatever, however much they may remonstrate against it. The habitual use of these things is *invariably* and *absolutely* accompanied by a weak constitution, a yellow complexion, and either very irritable or half paralyzed nerves. Hence all nations not using these stimulants are, in general, vigorous and strong; while the Chinese and Japanese are small and weak, and the same is more or less true of all Americans who use tea in excess. The habitual use, as we have said, is bad; still a good cup of tea after severe mental exertion is more beneficial than a hearty meal, or the best beef-steak. A person whose nerves are tired can no more digest his food well than a person whose muscles are tired can make a satisfying meal from a cup of tea. The great difference relative to the demand of these two kinds of tiredness on the blood, is almost entirely unknown. The use of the nervous system requires a restitution of the blood-salts more than of the so-called respiratory food, sugar, starch, fat, etc., while muscular labor requires very little use of the blood-salts, but more the respiratory food. The necessary food for a person, therefore, depends upon the use he makes of his body. Hence, many persons, while living, as they think, absolutely correctly,

are, in fact, doing just the opposite. Suppose, for instance, a man who is doing hard brain-work orders, when hungry, a beefsteak with fried potatoes, and afterwards eats some pudding. If the steak is from an animal which has been fatted by stall feeding, it contains no salts, for the free use of salt would *prevent* the animal from taking on fat, and is therefore withheld; fat contains no salt, potatoes contain none, and fine flour, eggs, etc., from which the pudding is made, while containing sulphur, lime, and phosphorus, contain none, while, as pudding, it contains sugar, put in for flavoring instead of salt. Therefore, if he has not eaten a good deal of salt with such a meal, it is almost good for nothing for *him*. But had he eaten of partridge, celery with salt and fried potatoes, or of venison, and afterwards eaten some nuts and apples, he would then have taken all that his body required. Wild animals know how to provide for all their blood-salts, and are therefore never so fat. But the first meal is just the thing for a man who has been hard at work with his muscles and not with his brain. This is as good an illustration as can here be given of how a person may be in need of blood-salts, although eating what is believed to be the best food to be had.

But with children the matter is much worse. They are fed on starch, milk, white bread and

butter, pastry and cake, occasionally some meat, sugar and sweetmeats. Let me ask every mother how often they have put salt into the milk with which they have fed their babes, or into the starchy food or puddings? The food here specified contains no salt whatever; for domestic meat does not generally contain enough, nor does the milk, unless the cows run in pasture, or are fed very much according to nature, which they are not, because such feeding would not be productive of a sufficient quantity of milk to satisfy their owners. I maintain, that of *one hundred children in all our American cities, seventy-five are more or less deficient in the amount of salt required, and that this deficiency is substituted by sugar.* The consequence is scarlet fever, measles, chicken-pox, or small-pox, according to circumstances. And further, what is the reason (if not a deficiency of salts) that American children for the most part are delicate, not having much endurance, with white, instead of red, cheeks, and with flesh soft and flabby? The American houses are the best in the world; no country has better food, or a better supply; no children are kept cleaner, none are dressed better, and more suitably, none get better air, or live in cleaner cities, or attend school in better ventilated school-houses, and yet they are about the weakest! If any man can assign a reason, or answer the

question here involved, otherwise than we have done, we should like to know it. But we will just mention a better test, which all can apply. Take away from your children for several meals *all* sugar in every form, and allow them as much salt as they will eat of their own accord, and see ! Would a child one year old, think you, eat salt like sugar if it did not necessarily require it? If a child has already enough salt, and you give it even an atom more, it will spit it out immediately. Or, if you offer a child a few months' old lemon, and it eats it eagerly — does it show nothing? Give an absolutely well child lemon-juice, and see what a face it will make !

It is hardly necessary to add, that if an adult wishes to ascertain whether his blood requires salt, he must, first, leave off all sugar ; second, supply the organic acid, especially lemon-juice, as long as the taste craves it ; and third, not to spoil the natural taste by excessive use of alcohol, tea, coffee, tobacco-chewing, or similar strong agents, which paralyze the nerves of taste. In short, we would recommend the following : when undressed, press gently with the hand on the pit of the stomach, under the breast-bone, and if there should be any pain or a sensation of uneasiness, either you have an inflamed stomach, or more often, chronic affection of the liver, and are seriously sick, however well you may feel. • In

this case, or if there is habitual constipation, an educated and skilful physician should be applied to at once, for the removal of the difficulty. If no pain or uneasiness is experienced in the pit of the stomach upon prèssure, and there is no habitual constipation, there is no need of a physician to bring the blood into an absolutely normal condition; to accomplish which — 1. Never eat sugar at the same time with meat; 2. Salt all food used before adding sugar; 3. Never drink while eating; 4. Drink as much lemon-juice as the taste indicates, and continue its use as long as there is a desire for acids; 5. Eat the desired quantity of salt at each meal; 6. Eat otherwise any kind of food which fancy or appetite craves, but with variety; that is, not confined to one kind or variety of fare. I positively maintain that a person who has properly balanced blood—the correct amount of water, salts, and albuminous matter — cannot catch or be liable to any disease, having no predisposition therefor. For I maintain that if there is no superfluous albumen in a person's blood, none can escape into the skin, as in Small-pox, and the nerves of such a person are in a condition to endure influences that generally produce "cold" or sickness without the least injury to him. Such a person feels vigorous, happy, lively and strong; but he who feels otherwise has not his blood in good order.

Having thus explained, theoretically, what I believe an absolute and unfailing preventive against Small-pox, I can mention only limited practical and experimental proofs. By observing and demonstrating the above rules, I have found, during a practice of fourteen years, that in all the families I have attended during this time, there is not a single child who has been affected by scarlet fever, small-pox, or any other so-called catching disease, not even the measles; though never allowed to be kept from contact with other children, or to take preventive measures of any kind whatever.

As regards myself — was vaccinated when a small child, but never since — have exposed myself, in all European hospitals that I attended, to the Small-pox patients, *without* using or taking any preventive measures; at one time, for six months regularly. In Hayti I have been exposed many times, but once especially, purposely remaining for an hour in a room with five sick and dying children of Small-pox, who had been treated according to the Haytien manner; namely, the pustules cut open, and then rubbed with rum. Two of them died while I was present, and the other three within twelve hours, all of internal gangrene. This exposure was productive of no effect whatever upon my own person, though the stench was of such a character as to affect *any*

person if it were possible. Nor have I ever, nor would I ever take any measures of disinfection in seeing Small-pox patients, without the least fear of infection, so long as the blood is in good condition.

These facts here mentioned, although not conclusive proofs, are nevertheless so for me. Since the views here laid down can do no harm, and cost nothing, they should be tested by others. The importance of salt in the human economy is known by all physicians, and should be by everybody; and were some attention paid to this subject, it could be easily ascertained whether Small-pox appears where salt has been properly used or not; for myself, I can only give the experience, and state the facts as they have been derived from study and research.

Resumé. — Let it be distinctly understood that what I intend to say is, that vaccination has not proved to be an absolutely reliable preventive against Small-pox; and, therefore, that better means for protection are needed.

That it is absolutely necessary, first, to know the nature of a disease before any attempt can be made to prevent it.

That I have discovered the following facts, and maintain, that Small-pox consists in the escape

of *superfluous* albuminous substances into the tissues of the periphery of the nervous centres of the body, caused, in the first place, by the want of salt.

That the *proper* use of salt is the scientific and most certain preventive of Small-pox, both in theory and practice, that I have any knowledge of.

That the use of organic acids is the best means of freeing the blood from abnormal substances, which, for the time being, may substitute the place of salt in the body.

That alcohol is an agent which eliminates the blood-salts, and, therefore, after its use, the salt thus eliminated must be restored.

That sugar can take the place of salt in regard to taste, much to the injury of the blood of the person substituting it.

That in mental labor more salt is brought into requisition, and used up, than in muscular or physical labor; and, therefore, that more must be used or taken into the body in the former case than in the latter.

That a person who has a properly balanced blood cannot catch, or take, Small-pox under any circumstances of exposure.

This theory, if correct, must hold good in all cases, without a single exception; and if nothing can be found to disprove its correctness, it holds

good that the *proper* use of salt, in the human economy, will eradicate Small-pox at once and forever.

Therefore the use and office of salt should be more generally known and taught in all our public schools.

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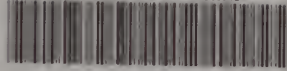
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